

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SMR/P550568PC	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB 03/02521	International filing date (<i>day/month/year</i>) 12.06.2003	Priority date (<i>day/month/year</i>) 13.06.2002
International Patent Classification (IPC) or both national classification and IPC D06N7/00		
Applicant MILLIKEN INDUSTRIALS LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 2 sheets.
3. This report contains indications relating to the following items:
- I Basis of the opinion
 - II Priority
 - III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV Lack of unity of invention
 - V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI Certain documents cited
 - VII Certain defects in the international application
 - VIII Certain observations on the international application

Date of submission of the demand 09.01.2004	Date of completion of this report 08.07.2004
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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB 03/02521

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-20 as originally filed

Claims, Numbers

22 as originally filed
1-21 received on 28.06.2004 with letter of 28.06.2004

Drawings, Sheets

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

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5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-21
	No: Claims	
Inventive step (IS)	Yes: Claims	1-21
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-21
	No: Claims	

2. Citations and explanations

see separate sheet

1). GB 1 373 923 (hereinafter "D1") discloses in example 6 an artificial turf, consisting of a pile nylon fabric on a base of a crumbed rubber/binder composition (see table II and example 2 of D1). The binder is an isocyanate based polymer. It is apparent that the composite of example 6 is based on an asphalt supported composite (cf example 2). However this is not excluded by the present claims.

It would appear that the density of the binder is less than that of the rubber, based on consideration of the nature of the materials involved.

WO96/22413 (hereinafter D2) also discloses a floor covering based on a tufted textile outer layer (p. 3 line 24, p. 5 line 7). The binder consists of a polyurethane continuous phase with particles of vulcanized rubber (0.5-5mm) dispersed therein (claim 2,3).

US 4 112 176 (hereinafter D3) discloses a carpet having a composite backing (fig 3, abstract). The backing is a polyurethane/ground rubber composition. The top layer is a tufted fabric. in col. 1 line 21 and col. 4 line 42, carpeting is explicitly disclosed. The first passage on column 3 discusses the composite backing as being a blend of a PU binder with vulcanized rubber particles of size 3.0-10.0 microns. Example 2 discloses a composite as a rug underlay. The composite consists of particulate vulcanized rubber with a polyisocyanate binder.. This was used to prepare a backing for carpeting. The crumb rubber is all less than 12.5 mm size (table line 45 of column 7).

These documents however do not disclose a dust control mat as claimed.
Accordingly, novelty is acknowledged.

6). WO96/38298 is concerned with dust control mats. The subject matter claimed is distinguished from these essentially mats by the backing employed, the mats of WO employing the conventional rubber sheet backing. IN particular it is noted that according to WO, page 5 the backing is provided as a roll which in a separate sheet is applied to the front of the mat.

The mat now claimed is prepared by a process in which the crumb is applied to the reverse of the top surface (tufted) and cured in situ. This would appear to provide an indication of a simpler process for providing dust control mats.

There is no suggestion in WO that would suggest to replace the backing therein employed by the crumb backing now claimed, even if the problem of providing a simpler process is de facto obvious, this solution is not.

Accordingly an inventive step appears to be present.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB 03/02521

Claims

1. A dust control mat with a tufted pile textile surface comprising tufts of yarn tufted into a tufting substrate and an elastomer backing, wherein the textile surface has a dust retention performance in an unwashed state defined by a sand retention value of at least 1000 g/m², and the elastomer backing includes elastomer crumbs, a binder and a plurality of voids between the elastomer crumbs, such that the backing has a density in the range 0.5-0.9g/cm³.
2. A mat according to claim 1 wherein the elastomer crumb is crumbed vulcanized rubber.
3. A mat according to claim 2 wherein the rubber is nitrile rubber.
4. A mat according to any preceding claim, characterised in that the elastomer backing has a bulk density in the range 45 to 70%, preferably 55 to 70%, of the solid density of the elastomer crumb material.
5. A mat according to claim 4, characterised in that the backing has a density in the range 0.7 to 0.9g /cm³.
6. A mat according to any preceding claim, characterised in that the elastomer backing exhibits a deformability, as measured by the test herein defined, of at least 14%, preferably 14 to 50%, more preferably 14 to 25%.
7. A mat according to any preceding claim in which the backing has a thickness of at least 1 mm.
8. A mat according to any preceding claim in which the crumb size is less than 5 mm diameter and is preferably substantially in the range 2 to 4 mm.
9. A mat according to any preceding claim in which the elastomer crumb backing includes powdered elastomer crumb comprising at least 10% by weight of the backing.
10. A mat according to any preceding claim in which the binder is present at a level of from 2 to 20% by weight of the backing.
11. A mat according to claim 10, in which the elastomer crumb backing includes elastomer crumbs and some or no powdered elastomer crumb, wherein the powdered elastomer crumb comprises less than 1% by weight of the backing and the binder is present at a level of from 2 to 12% by weight of the backing.

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12. A mat according to claim 10, wherein the elastomer crumb backing includes powdered elastomer crumb comprising at least 10% by weight of the backing and the binder level lies in the range 9 to 20%, preferably about 14% by weight of the backing.
13. A mat according to any preceding claim in which the binder is a polyurethane MDI binder.
14. A mat according to claim 13 in which the binder is selected from the group consisting of 4,4-methylene di-p-phenylene isocyanate (MDI) polyurethane one- and two-component adhesives.
15. A mat according to claim 14 in which the binder is a solvent free one component polyurethane adhesive.
16. A mat according to any one of claims 1 to 12 in which the binder is a hot melt binder.
17. A mat according to any preceding claim in which the backing includes powdered additives selected from the group consisting of anti-microbial additives, anti-flammability additives, pigments, such as iron oxide, and anti-static additives, such as carbon fibres.
18. A mat according to any preceding claim, characterised in that a crumb rubber border extending beyond the periphery of the textile surface is provided on at least two opposite edges of the mat.
19. A mat according to claim 18 comprising a crumb rubber border extending around the entire periphery of the mat.
20. A mat according to any preceding claim, wherein an edging strip is bonded to the elastomer backing adjacent at least one edge thereof.
21. A mat according to claim 20, wherein the textile surface partially overlaps and is bonded to the edging strip.

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